

We have one goal — improving the noise and vibration quality of our customers' products. Roush delivers innovative, effective noise and vibration control solutions. By combining advanced analysis capabilities, comprehensive engineering services, and state-of-the-art facilities, Roush has become a proven partner in identifying and resolving challenging noise and vibration issues. Backed by the diverse capabilities of the Roush family of companies, we are uniquely equipped to provide turnkey noise and vibration solutions.

Roush... your silent partner in developing smoother, quieter products.

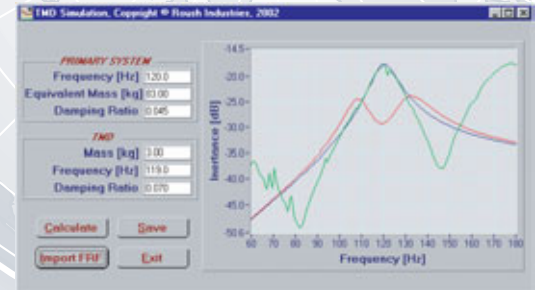
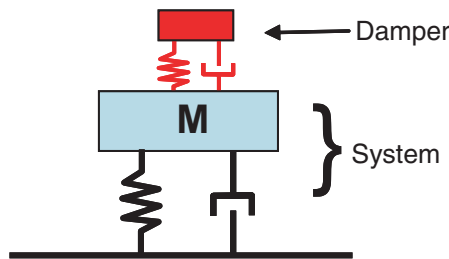
Damper and Vibration Absorber Engineering

Roush Noise and Vibration Engineering has developed a proprietary Tuned Mass Damper (TMD) and Tuned Vibration Absorber (TVA) Simulation package which utilizes a data base of measured elastomeric material properties. This facilitates the process of designing optimized damper systems for a wide variety of vehicle applications. Because Roush Noise and Vibration Engineering has access to a variety of elastomeric products, we are uniquely capable of fabricating the damper system, and testing its effectiveness using bench, shaker and vehicle methodologies.

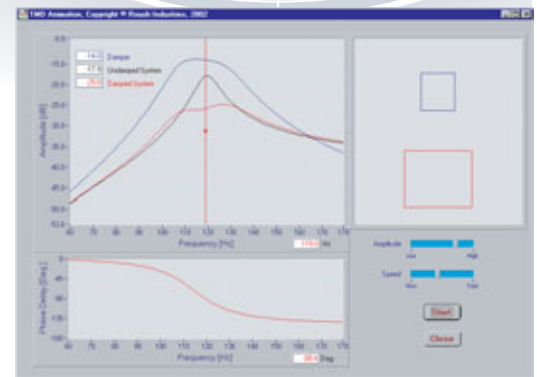
The Roush simulation software takes into account the temperature and frequency effects on the elastomer properties while designing the dampers. It has proven to accurately predict performance in vehicles prior to fabrication.

Roush Damper Tuning Process

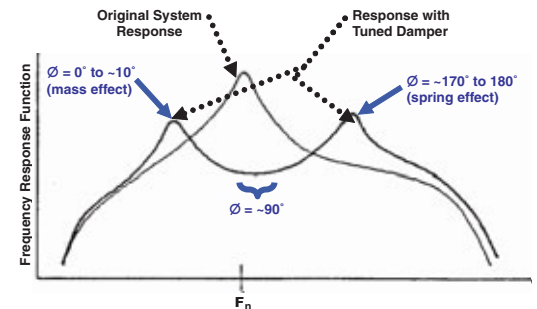
- Perform driving point measurements at proposed damper attachment locations.
- Import FRF data into software
- Determine the optimal inertial mass, frequency, and damping.
- Determine performance for various operating temperatures
- Determine how manufacturing tolerances will affect damping performance.
- Determine trade-offs between cost, weight and performance.
- Fabricate the damper, bench tune and test in a vehicle.

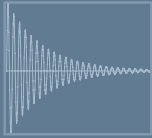


Matching Damping with SDOF Model



Model Predicts Amplitudes and Phase Relationships of System and Damper





NOISE AND VIBRATION ENGINEERING

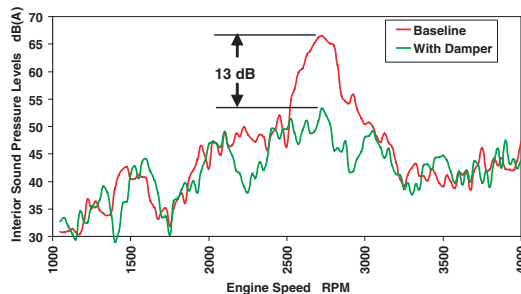
Typical Damping Applications

- Steering Wheel Shake
- Exhaust Systems
- Propshaft and Halfshaft Bending
- Torsional Vibration
- Powertrain Bending
- Axle Pinion Pitch
- Subframe Resonance
- Axle Noise
- Transmission Noise
- Body Structure
- Aircraft
- Sports Equipment
- Hand Tools

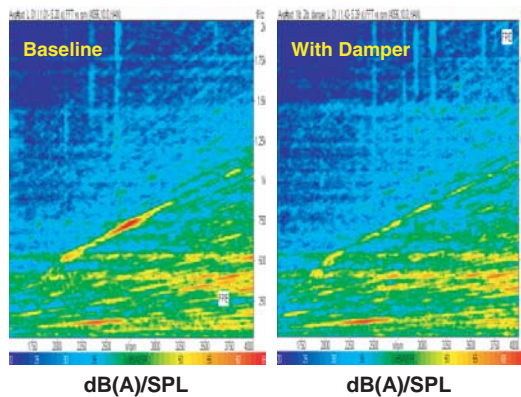


Impact test while mounted to bed plate

Damper Application Example



Performance verification in vehicle



Shaker Test

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